worth mentioning is that little idea is given of the plant as an irritable organism, irritability being scarcely alluded to except in connection with movements. The subjects treated are the chemical composition of plants, osmosis, absorption of water, transpiration, absorption of food materials, photosynthesis, formation of proteids, translocation and storage of foods, enzymes, respiration, growth, reproduction, cultivated plants and their origin, and plant breeding. Under the head of sexual reproduction of seed plants the author in the main steers clear of the usual misleading terminology, but evidently finds it impossible to make clear the real situation without more training than the book demands.

The fourth part has to do with the "classification and special botany of farm crops." After a general discussion of the classification of plants, in which the emphasis is naturally laid upon seed plants, the author selects for special presentation the following families: Cannabaceae, Chenopodiaceae, Cruciferae, Rosaceae, Leguminosae, Umbelliferae, Solanaceae, Compositae, and Gramineae, with special chapters on cultivated and wild oats, cultivated barleys, rye, wheats, grasses, and clovers. The fifth part discusses the weeds of the farm. A general discussion of the injurious effects of weeds, their duration, their habit of growth, how they spread, and their extermination, is followed by an account of special weeds.

The sixth part presents the subject of farm seeds, the purity, germination capacity, germination energy, weight, form, color, etc., of seeds being discussed. The seventh part considers fungi chiefly in relation to some common diseases of plants. After a presentation of the structure and habits of fungi in general, the different diseases which they produce in farm crops are discussed. The last part is devoted to a consideration of bacteria. The morphology and reproduction of bacteria are first presented, and afterwards their work in lactic, butyric, and acetic fermentations, and in putrefaction, nitrification, denitrification, fixation of free nitrogen, and diseases of animals.

It will be observed that the scope of the book is broad, and that it includes the subjects of special interest to cultivators of plants. It certainly deserves to be received eagerly by agricultural schools and those engaged in agricultural pursuits.— J. M. C.

A botanical dictionary.

THE making of a good dictionary, even though limited to the special vocabulary of a single science, is not the easy task a novice might imagine. It is fortunate, therefore, that the task was undertaken by so competent a person as Mr. B. Daydon Jackson, who, if we may judge by his works, delights in painstaking labor of a kind that is intolerable drudgery to most men. He fully realizes the difficulties of the present task and the meager appreciation it is likely to receive, for he aptly quotes Dr. Johnson: "Every other author may aspire to praise, the lexicographer can only hope to escape reproach."

It will be only just, therefore, to express at once our hearty commendation of the work which Mr. Jackson has done, and to say that the glossary, as he modestly calls it,[2] is not only by far the largest and most comprehensive botanical dictionary in the English language, but by far the best. Concise definitions, brief derivations, and the accents are given for almost 15,000 words, which is about three times the number in Crozier's hastily compiled dictionary, issued a few years ago in this country. The only English botanical dictionaries are long since out of date and practically useless.

Mr. Jackson has succeeded remarkably well in traversing the whole range of our terminology. Even very new words have not escaped him, for he includes such terms as *edaphic*, *tropophyte*, *geophyte*, *coenocentrum*, *compound oosphere*, etc. Most of the definitions are concise and good ; some, however, are incomplete, *e. g.*, *tree*, *xerophyte ;* some are careless or ambiguous, *e. g.*, *coenocentrum*, *mycorhiza* (misspelled mycorrhiza), *geophyte ;* and some are antiquated or erroneous, *e. g.*, *archesporial cells*, *chlorovaporization*, *oogenesis*, *fertilization*, *sperm cell*, etc. The accent given does not always coincide with lexicons, *e. g.*, *medúllary* and *eláter*. In the former case it does not coincide with usage in this country though the author says medúllary is the usage in England. And if usage even permits eláter, it violates all rules of quantity.

Part, perhaps a large part, of the faults are due to the extreme condensation of the definitions. This might have been avoided, without making the volume of inconvenient size, by dispensing with a number of words derived from Crozier's dictionary, which, as inquiry and search indicate, neither have nor have had botanical use in literature, *e. g.*, *gusset*, *ensate*, *hydroid*, *polydelphous*, *secondine*, etc. Greater fullness of the definitions might also have been compensated for by using thinner paper, instead of the thick and stiff stock, which, together with the stiff binding (entirely unfit for such a reference book), prevents the book from opening comfortably or lying open. But blemishes such as these, the more noticeable because so easily avoidable, may well be overlooked in view of the good qualities, too many to enumerate, which distinguish this book from its predecessors. Every laboratory needs a copy on its shelves.—C. R. B.

MINOR NOTICES.

THE FOURTH PART of the "Catalogue of Welwitsch's African plants," by W. P. Hiern, and published by the British Museum, has just appeared, including Lentibulariaceæ to Ceratophylleæ. The occasion of the publication was stated in the review of the first part, published in the GAZETTE (23 : 210. 1897). The present part contains some important families, as Acanthaceae, Verbenaceae, Labiatae, Euphorbiaceae, etc. Approximately ninety

[2] JACKSON, BENJAMIN DAYDON : A glossary of botanic terms, with their derivation and accent. 12mo. pp. xii + 327. London : Duckworth & Co. Philadelphia : J. B. Lippincott Co. 1900.